Checkpoint I: Project Proposal

Group: G13
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Domain

The domain of the visualization is forex trading, specifically the analysis and correlation of forex price movements with fundamental news, sentiment and technical indicators.

Forex trading, the global marketplace for currency exchange, witnesses vast fluctuations influenced by a combination of market speculation, economic indicators, and world events. We will focus on the major forex pairs, comprising EUR/USD, USD/JPY, GBP/USD, USD/CHF, AUD/USD, USD/CAD and NZD/USD, encapsulating the primary movements in this vast landscape.

For an effective analysis, traders often blend price movement observations across various timeframes with technical indicators - tools that predict future price levels or the general price direction. These methods, while robust, gain another layer of depth when compared with fundamental news - scheduled economic announcements and reports.

This project aims to craft an integrative visualization for the seven major forex pairs. By concurrently mapping price trajectories, key technical markers, and significant fundamental news events, we aspire to offer a comprehensive snapshot that captures the multifaceted nature of forex trading dynamics.

Dataset Description

Our primary dataset captures the price movements of the seven major forex pairs—EUR/USD, USD/JPY, GBP/USD, USD/CHF, AUD/USD, USD/CAD, and NZD/USD. This data has been sourced exclusively from Dukascopy, renowned for its high-quality data. This data will encapsulate essential metrics such as the date, time, open, high, low, close prices, and volume across a diverse range of timeframes, from daily to hourly breakdowns.

For the technical indicators, our approach will be grounded in precision and customizability. Instead of relying on pre-packaged datasets, we will employ Python, leveraging its powerful libraries, to import the forex price data. Upon importing, we will enhance the dataset by calculating and appending a range of technical indicators directly to our dataframe. This approach ensures that the indicators, which may include tools such as Moving Averages, Relative Strength Index (RSI), and Bollinger Bands, are tailored to our specific analytical requirements and are in congruence with our price data.

Our exploration of the forex landscape would be incomplete without integrating the crucial dimension of fundamental news. To provide this layer of depth, we have harnessed historical data from the forex-centric economic calendar on FXStreet. The data derived from this platform offers insights into the date and time of the news, the specific currency affected, the nature of the news event, the market's expectation, the actual outcome, and its potential or realized impact on the market."

While the forex price and technical indicators will be methodically structured, sourcing fundamental news data might present challenges due to its varied nature, potentially necessitating web scraping and occasional manual intervention. Given the diverse origins of our data, cleaning and normalization will be crucial to maintain its accuracy and uniformity.

Example Questions

1. **Interactive Exploration of Price Movements:** What is the pattern of OHLC prices over time? The user will interact with a candle bar chart and filter by the currency and time frame. For example, examining a candlestick chart of EUR/USD over the past year, users can identify recurring patterns in price movements, such as head and shoulders, double tops, or bullish engulfing patterns, and use this information to make informed trading decisions.

2. **Price Movement Correlation with News:** What influence does the release of fundamental news have upon each forex pair? News such as non-farm payrolls or central bank announcements can be correlated with shape price fluctuations of forex pairs (EUR/USD; GBP/JPY etc). Users can spot seasonal trends or long-term shifts in market behaviour throughout the specific months or quarters.

3. **News Volume in each Country:** Which countries had more relevant news? A choropleth map will show the comparison of the amount of news coverage that different countries receive, which can be filtered according to the relevance of the news (high, medium and low impact).

4. **Currency Pairs Correlation Matrix:** How do different currency pairs interact with each other in terms of price movements? By visualizing a heatmap of correlation coefficients between pairs (e.g., EUR/USD, GBP/JPY, USD/JPY), users can discern which pairs tend to move in tandem and which ones display inverse relationships.

5. **Influence of Technical Indicators on Price Behaviour:** How effective are the technical indicators in predicting future price movements? Utilizing line or area charts overlaying price data with technical indicators like Moving Averages, RSI, and Bollinger Bands, users can visually assess instances where the price respected or broke these indicator thresholds. For example, visualizing moments when the EUR/USD price breaks above the upper Bollinger Band and simultaneously has an RSI reading above 70 might signify an overbought condition, prompting potential reversal trades.

Data Sample

1. Forex Price Movements (Dukascopy):
2. Fundamental News (FXStreet);

All the data is available in the following link:
https://github.com/antoniovitorvb/IST-information-visualization-data